# HECK YES! CSS!

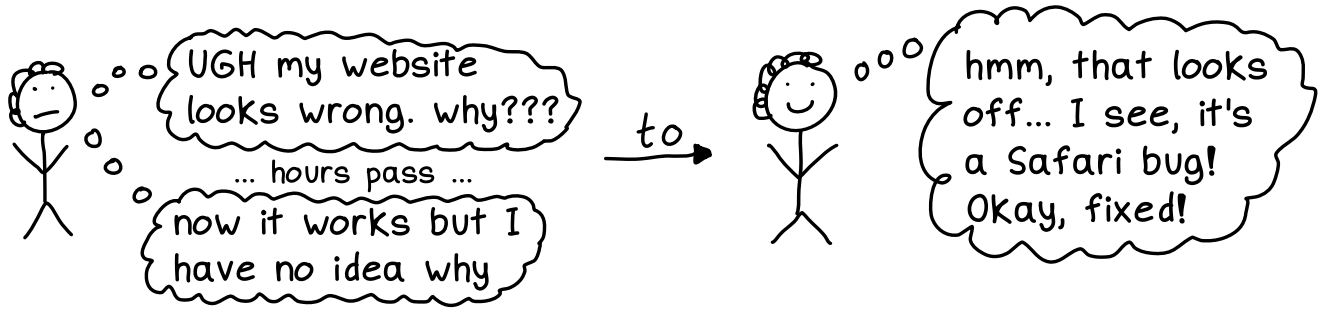
by Julia Evans



♡ this?
more at
★ wizardzines.com ★

# what's this?

I wrote this zine because, after 15 years of being confused about CSS, I realized I was still missing a lot of basic CSS knowledge. Learning the facts in this zine helped me go from:




This zine also comes with ;examples; for you to try out. They're at:

https://css-examples.wizardzines.com

Panels which have examples you can try are labelled TRY ME!

# thanks for reading

CSS is a HUGE topic and there's a lot more to learn than what's in this zine. Here are some of my favourite CSS resources:

♡CSS Tricks (css-tricks.com)

Hundreds of helpful blog posts and incredible guides, like their guides to centering & flexbox.

♡Mozilla Developer Network (developer.mozilla.org)

My favourite reference for CSS, JS, HTML, and HTTP

♡Can I use... (caniuse.com)

Tells you which browser versions (and what likely % of your users) have support for each CSS feature.

♡W3 (w3.org/TR/CSS)

The CSS specifications. Can be useful as a reference too!

credits

Cover art: Vladimir Kašiković
Editing: Dolly Lanuza, Kamal Marhubi
Technical review: Melody Starling
and thanks to all the beta readers ♡

# testing checklist

Finally, it's important to test your site with different browsers, screen sizes, and accessibility evaluation tools.

### browsers

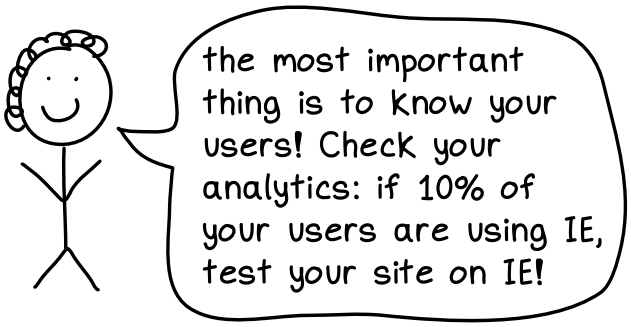
- ☐ Chrome
- ☐ Safari
- ☐ Firefox
- ☐ maybe others!

### sizes

- ☐ small phone (300px wide)
- ☐ tablet (~700px)
- ☐ desktop (~1200px)

### accessibility

- ☐ colour contrast
- ☐ text size
- ☐ keyboard navigation
- ☐ works with a screen reader




### performance

- ☐ fake a slow/high latency network connection!

# table of contents

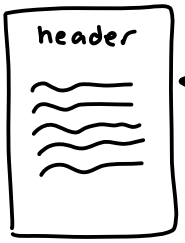
# CSS isn't easy

## CSS seems simple at first

```
h2 {
  font-size: 22px;
}
```

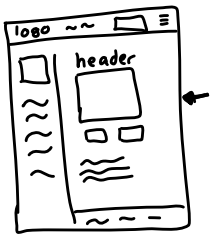
ok this is easy!

## and it is easy for simple tasks




a layout like this is simple to implement!

## but website layout is not an easy problem




this needs to adjust to so many screen sizes!

## the spec can be surprising

TRY ME!

setting `overflow: hidden;` on an inline-block element changes its vertical alignment

CSS 2.1

weird!

## and all browsers have bugs

I don't support flexbox for <summary> elements

safari

ok fine

## accept that writing CSS is gonna take time

if I'm patient I can fix all the edge cases in my CSS and make my site look great everywhere!

# the CSS inspector

## all major browsers have a CSS inspector

usually you can get to it by right clicking on an element and then "inspect element, but sometimes there are extra steps

## see overridden properties

```
button {
  display: inline-block;
  color: var(--orange);
}
```

## edit CSS properties

```
element {
}
```

lets you change this element's properties

```
button {
  display: inline-block;
  border: 1px solid black;
}
```

this lets you change the border of every <button>!

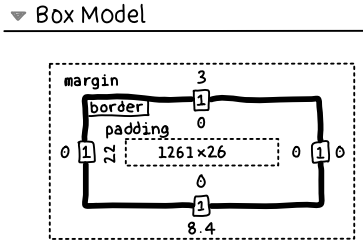
## see computed styles

here's a website with 12000 lines of CSS, what `font-size` does this link have?

12px, because of x.css line 436

browser

## look at margin & padding




## ... and LOTS more

different browsers have different tools! For example, Firefox has special tools for debugging grid/flexbox

# media queries

## media queries let you use different CSS in different situations

```
@media print {
  #footer {
    display: none;
  }
}
```

media query

CSS to apply

## max-width & min-width

```
@media (max-width: 500px) {
   // CSS for small screens
}

@media (min-width: 950px) {
   // CSS for large screens
}
```

## print and screen

`screen` is for computer/ mobile screens

`print` is used when printing a webpage

there are more: `tv`, `tty`, `speech`, `braille`, etc

## accessibility queries

you can sometimes find out a user's preferences with media queries

examples:

```
prefers-reduced-motion: reduce
prefers-color-scheme: dark
```

## you can combine media queries

it's very common to write something like this:

```
@media screen and
    (max-width: 1024px)
```

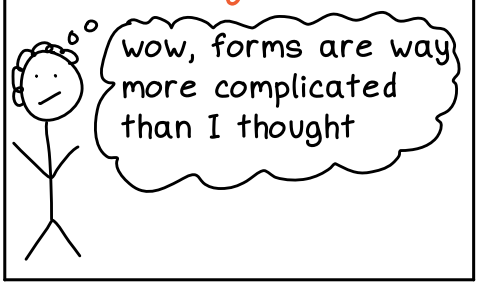
## the viewport meta tag

```
<meta name="viewport"
content="width=device-width,
initial-scale=1">
```

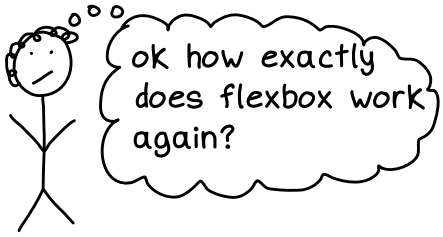
Your site will look bad on mobile if you don't add a tag like this to the `<head>` in your HTML. Look it up to learn more!

# CSS != design

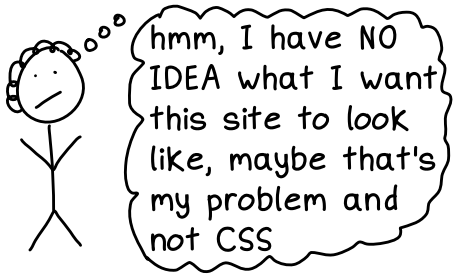
## web design is really hard



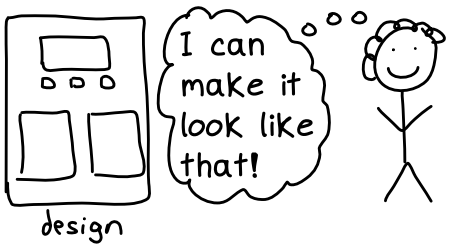

## writing CSS is also hard



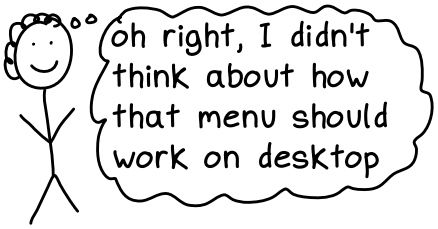

## remember that they're 2 different skills



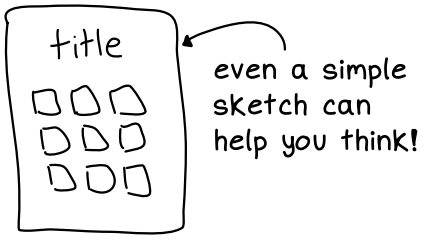

## CSS is easier when you have a good design




## usually you have to adjust the design



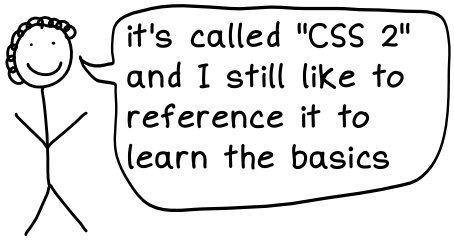

## sketching a design in advance can help!



# CSS specifications

## CSS has specifications


## there used to be just one specification




## today, every CSS feature has its own specification

you can find them all at `https://www.w3.org/TR/CSS/`

there are dozens of specs, for example: colors, flexbox, and transforms

## major browsers usually obey the spec

but sometimes they have bugs


## levels

CSS versions are called "levels".

new levels only add new features. They don't change the behaviour of existing CSS code

## new features take time to implement

`https://caniuse.com` can tell you which browser versions support a CSS feature

# transitions

## an element's computed style can change

2 ways this can happen:

1. pseudo-classes (like `:hover`)
2. Javascript code `el.classList.add('x')`

## new styles change the element instantly...

```
a:hover {
  color: red;
}
```

the element will turn red right away

## ... unless you set the `transition` property

TRY ME!

```
a {
  color: blue;
  transition: all 2s;
}
a:hover {
  color: red;
}
```

will fade from blue to red over 2s

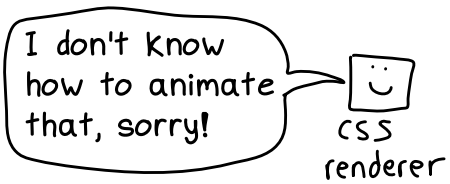
## `transition` has 3 parts

```
transition: color 1s ease;
```

which CSS properties to animate — duration — timing function

## not all property changes can be animated....

```
list-style-type: square;
```



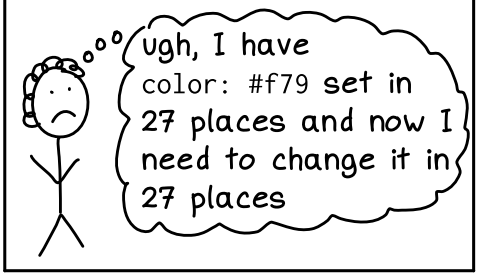

## ...but there are dozens of properties that can

if it's a number or color, it can probably be animated!

```
font-size: 14px;
rotate: 90deg;
width: 20em;
```

# CSS variables

## duplication is annoying




## define variables in any selector

```
body {
  --text-color: #f79;
}
#header {
  --text-color: #c50;
}
```

applies to everything

applies to children of #header

## use variables with var()

```
body {
   color: var(--text-color);
}
```

variables always start with --

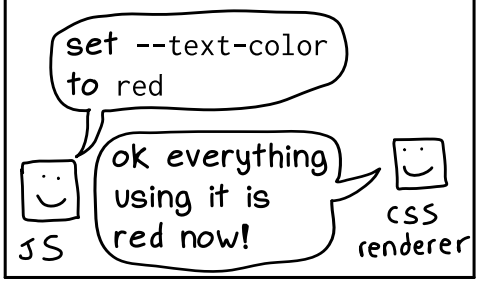
## do math on them with calc()

```
#sidebar {
   width: calc(
       var(--my-var) + 1em
   );
}
```

## you can change a variable's value in Javascript

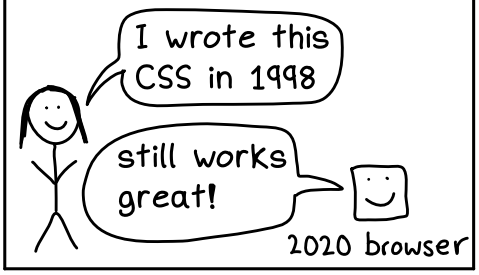
```
let root =
  document.documentElement;
root.style.setProperty(
   '--text-color', 'black');
```

## changes to variables apply immediately




# backwards compatibility

## browsers support old HTML + CSS forever




## this makes CSS hard to write...


## ... but it means it's worth the investment

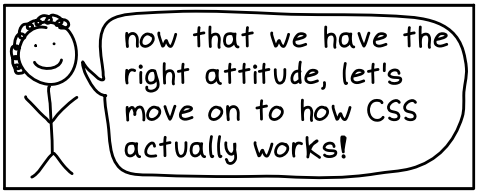

## if you don't follow the standards, you're not guaranteed backwards compatibility


## your CSS doesn't have to support browsers from 1998


## newer features are often easier to use

what people expect from a website has changed a LOT since 1998. Newer CSS features make responsive design easy

# a few CSS selectors




### div

matches `div` elements

```
<div>
```

### #welcome

`#` matches elements by `id`

```
<div id="welcome">
```

### .button

`.` matches elements by `class`

```
<a class="button">
```

### div .button

match every `.button` element that's a descendent of a `div`

### div.button

match divs with class "button"

```
<div class="button">
```

### div > .button

match every `.button` element that's a direct child of a `div`

### .button, #welcome

matches both `.button` and `#welcome` elements

### [href^="http"]

match `a` elements with a `href` attribute starting with `http`

### :checked

matches if a checkbox or radio button is checked

### a:hover

matches `a` elements that the cursor is hovering over

### tr:nth-child(odd)

match alternating `tr` elements (make a striped table!)

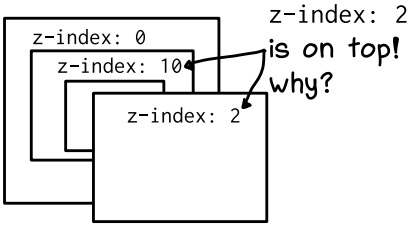
# stacking contexts

### a z-index can push an element up/down...

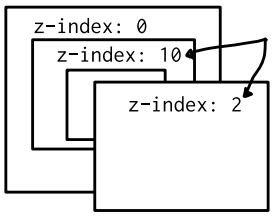
```
.first {
  z-index: 3;
}
.second {
  z-index: 0;
}
```


### ... but a higher z-index doesn't always put an element on top

TRY ME!

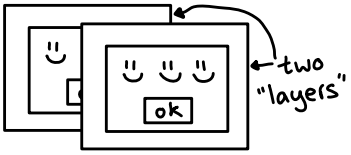



### every element is in a stacking context




these 2 elements are in different stacking contexts

### a stacking context is like a Photoshop layer




by default, an element's children share its stacking context

### setting z-index creates a stacking context

```
#modal {
    z-index: 5;
    position: absolute;
}
```

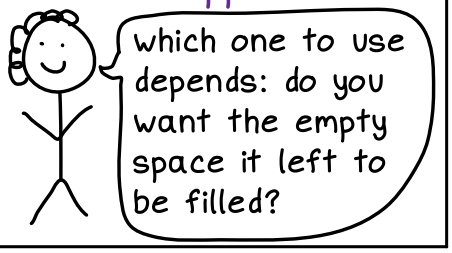
this is a common way to create a stacking context

### stacking contexts are confusing

You can do a lot without understanding them at all. But if `z-index` ever isn't working the way you expect, that's the day to learn about stacking contexts :)

# hiding elements

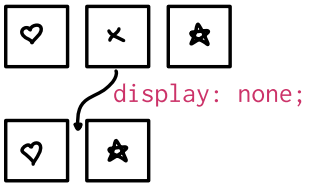
## there are many ways to make an element disappear




## display: none;

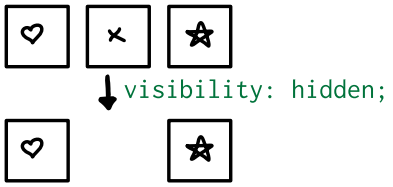
TRY ME!

other elements will move to fill the empty space




## visibility: hidden;

the empty space will stay empty




## opacity: 0;

like `visibility: hidden`, but you can still click on the element & it'll still be visible to screen readers. Usually `visibility: hidden` is better.

## how to slowly fade out

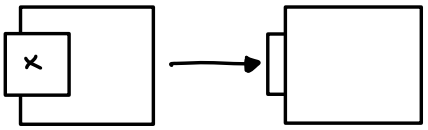
```
#fade:hover {
  transition: all 1s ease;
  visibility: hidden;
  opacity: 0;
}
```

set the opacity just so that the transition works

## z-index

TRY ME!

z-index sets the order of overlapping positioned elements



# specificity

## different rules can set the same property

```
a:visited {
  color: purple;
  font-size: 1.2em;
}
#start-link {
  color: orange;
}
```

which one gets chosen?

## CSS uses the "most specific" selector that matches an element

In our example, the browser will use `color: orange` because IDs (like `#start-link`) are more specific than pseudoclasses (like `:visited`)

## CSS can mix properties from different rules

TRY ME!

```
a:visited {
  color: purple;
  font-size: 1.2em;
}
#start-link {
  color: orange;
}
```

it'll use this font-size

but use this color because #start-link is more specific

## how CSS picks the "most specific" rule

a selector with element names
```
body div span a {
    color: red;
}
```

loses to

a selector with .classes or :pseudoclasses
```
.sidebar .link {
    color: orange;
}
```

loses to

a selector with an #id
```
#header a {
    color: purple;
}
```

loses to

an inline style
`style="color: green;"`

loses to

an `!important` rule*
`color: blue !important;`

`!important` is very hard to override, which makes life hard for your future self!

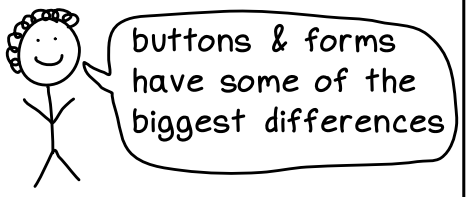
# default stylesheets

## every browser has a default stylesheet
(aka "user agent stylesheet")

a small sample from the Firefox default stylesheet:

```
h1 {
  font-size: 2em;
  font-weight: bold;
}
```

## different browsers have different defaults




## you can read the default stylesheet

Firefox's default stylesheets are at:

`resource://gre-resources/`

## every property also has a default "initial value"

the initial value (defined in the spec) is what's used if no stylesheet has set anything. For example, `background-color`'s initial value is `transparent`

## a CSS property can be set in 5 ways

lowest priority

1. the initial value
2. the browser's default stylesheet
3. the website's stylesheets
4. a user stylesheet (least common)
5. inline styles set with HTML/JS

highest priority

# position: absolute

## `position: absolute;` doesn't mean absolutely positioned on the page: it's relative to the "containing block"

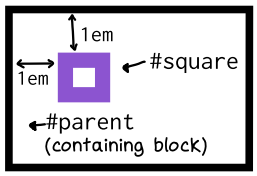
TRY ME!

the "containing block" is the closest ancestor with a `position` that isn't set to `static` (the default value), or the body if there's no such ancestor.

Here's some typical CSS:

```
#square {
  position: absolute;
  top: 1em; left: 1em;
}
#parent {
  position: relative;
}
```

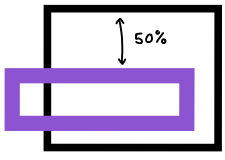
this makes #parent the containing block




## `top`, `bottom`, `left`, `right` will place an absolutely positioned element

```
top: 50%;
bottom: 2em;
right: 30px;
left: -3em;
```

negative works too



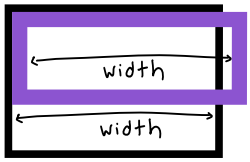

## `left: 0; right: 0;` ≠ `width: 100%;`

TRY ME!

`left: 0; right: 0;`

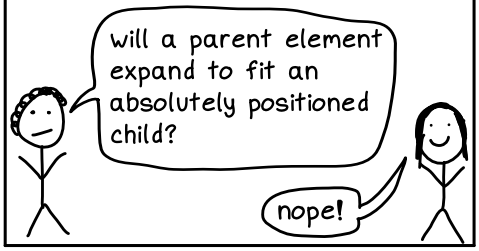
left and right borders are both 0px away from containing block

`width: 100%;`




the box sticks out because `width` doesn't include borders by default

## absolutely positioned elements are taken out of the normal flow



# centering

## center text with text-align

```
h2 {
  text-align: center;
}
```

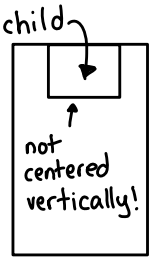
## center block elements with margin: auto

example HTML:

```
<div class="parent">
  <div class="child">
  </div>
</div>
```

## margin: auto only centers horizontally

```
.child {
  width: 400px;
  margin: auto;
}
```




## vertical centering is easy with flexbox or grid

TRY ME!

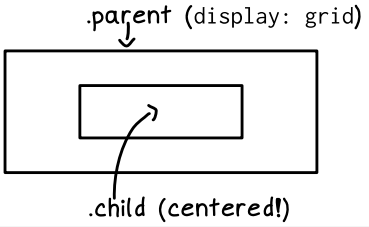
here's how with grid:

```
.parent {
  display: grid;
  place-items: center;
}
```

and with flexbox:

```
.parent {
  display: flex;
}
.child {
  margin: auto;
}
```

## it's ok to use a flexbox or grid just to center one thing




# units

## CSS has 2 kinds of units: absolute & relative

absolute: `px`, `pt`, `pc`, `in`, `cm`, `mm`

relative: `em`, `rem`, `vw`, `vh`, `%`

## rem

the root element's font size

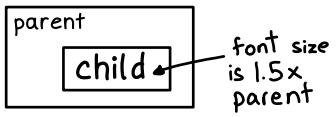
`1rem` is the same everywhere in the document. `rem` is a good unit for setting font sizes!

## em

TRY ME!

the parent element's font size

```
.child {
  font-size: 1.5em;
}
```




## 0 is the same in all units

```
.btn {
  margin: 0;
}
```

also, `0` is different from `none`. `border: 0` sets the border width and `border: none` sets the style

## 1 inch = 96 px

on a screen, 1 CSS "inch" isn't really an inch, and 1 CSS "pixel" isn't really a screen pixel. look up "device pixel ratio" for more.

## rem & em help with accessibility

```
.modal {
  width: 20rem;
}
```

this scales nicely if the user increases their browser's default font size

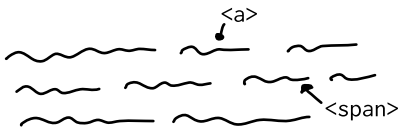
# inline vs block

## HTML elements default to inline or block

example inline elements:
<a> 
 <i>
<small> <abbr>
<img> <q>
<code>

example block elements:
<p> 
<ol> <ul> <li>
<h1> - <h6>
<blockquote>
<pre>

## inline elements are laid out horizontally




## block elements are laid out vertically by default


to get a different layout, use `display: flex` or `display: grid`

## inline elements ignore `width` & `height`*

Setting the width is impossible, but in some situations, you can use `line-height` to change the height

*`img` is an exception to this: look up "replaced elements" for more

## `display` can force an element to be inline or block

`display` determines 2 things:

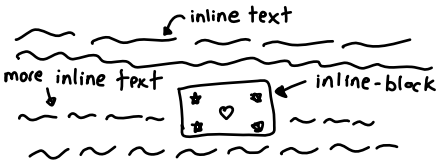
① whether the element itself is `inline`, `block`, `inline-block`, etc

② how child elements are laid out (`grid`, `flex`, `table`, default, etc)

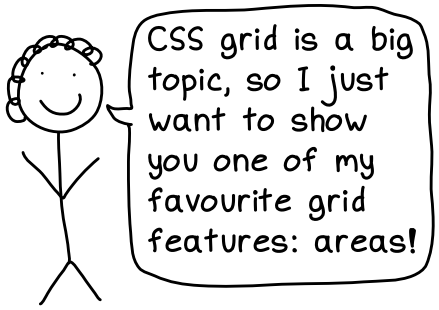
## `display: inline-block;`

TRY ME!

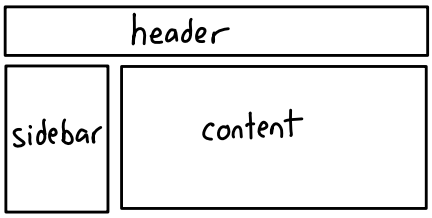
`inline-block` makes a block element be laid out horizontally like an inline element




# CSS grid: areas!



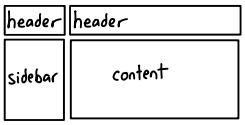

## let's say you want to build a layout




## `grid-template-areas` lets you define your layout in an almost visual way

```
grid-template-areas:
  "header header"
  "sidebar content";
```

I think of it like this:




## 1. write your HTML

TRY ME!

```
<div class="grid">
  <div class="top"></div>
  <div class="side"></div>
  <div class="main"></div>
</div>
```

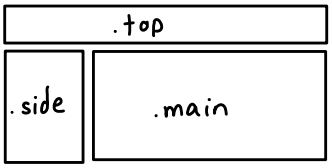
## 2. define the areas

```
.grid {
  display: grid;
  grid-template-columns:
      200px 800px;
  grid-template-areas:
    "header header"
    "sidebar content";
}
```

## 3. set `grid-area`

```
.top {grid-area: header}
.side {grid-area: sidebar}
.main {grid-area: content}
```

result:



# flexbox basics

TRY ME!

## display: flex;

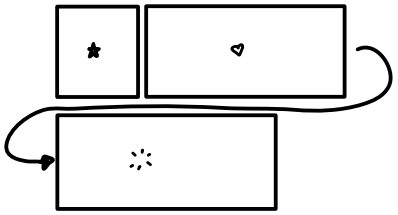
set on a parent element to lay out its children with a flexbox layout.

by default, it sets `flex-direction: row;`

## flex-direction: row;

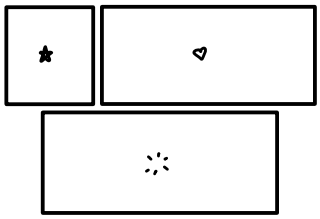
by default, children are laid out in a single row. the other option is `flex-direction: column`

## flex-wrap: wrap;



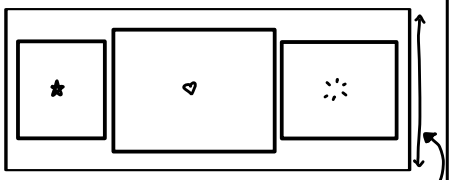
will wrap instead of shrinking everything to fit on one line

## justify-content: center;



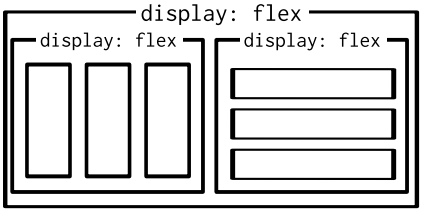
horizontally center (or vertically if you've set `flex-direction: column`)

## align-items: center;



vertically center (or horizontally if you've set `flex-direction: column`)

## you can nest flexboxes

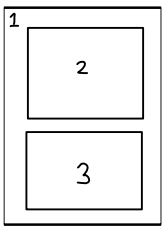



# the box model

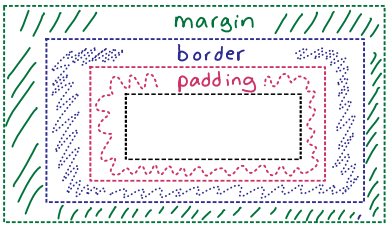
## every HTML element is in a box

```
<div class="1">
  <div class="2" />
  <div class="3" />
</div>
```

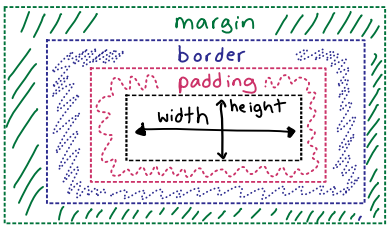
=>




## boxes have padding, borders, and a margin

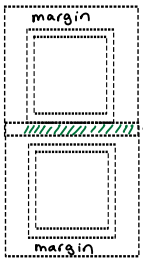



## width & height don't include any of those




## margins are allowed to overlap sometimes

TRY ME!

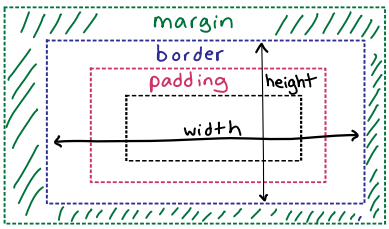



the browser combines these top/bottom margins

look up "margin collapse" to learn more

## box-sizing: border-box;

includes border + padding in the width/height




## padding & border are inside the element, margin is outside

For example, clicking on an element's border/padding triggers its `onclick` event, but clicking on the margin doesn't.

# padding + margin syntax

## there are 4 ways to set padding

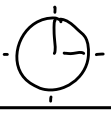
all sides
```
padding: 1em;
```
vertical horizontal
```
padding: 1em 2em;
```
top horizontal bottom
```
padding: 1em 2em 3em;
```
top right bottom left
```
padding: 1em 2em 3em 4em;
```

## tricks to remember the order

① trouble

top right bottom left

② it's clockwise



## you can also set padding on just 1 side

```
padding-top: 1em;
padding-right: 10px;
padding-bottom: 3em;
padding-left: 4em;
```

## differences between padding & margin

TRY ME!

- padding is "inside" an element: the background color covers the padding, you can click padding to click an element, etc. Margin is "outside".
- you can center with `margin: auto`, but not with padding
- margins can be negative, padding can't

## margin syntax is the same as padding

`border-width` also uses the same order: top, right, bottom, left

# borders

## border has 3 components

```
border: 2px solid black;
```

is the same as

```
border-width: 2px;
border-style: solid;
border-color: black;
```

## border-style options

solid

dotted

dashed

double

+ lots more (inset, groove, etc)

## border-{side}

you can set each side's border separately:

```
border-bottom:
    2px solid black;
```

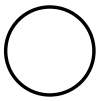
## border-radius

border-radius lets you have rounded corners

```
border-radius: 10px;
```

```
border-radius: 50%;
```

will make a square into a circle!



## box-shadow

lets you add a shadow to any element

element shadow

color

box-shadow: 5px 5px 8px black;

x offset y offset blur radius

## outline

TRY ME!

outline is like border, but it doesn't change an element's size when you add it

element

outlines on :hover/:active help with accessibility: with keyboard navigation, you need an outline to see what's focused